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ABSTRACT

This paper asserts that instead of assuming that the future of learning has to take place in buildings we happen to have now, districts can let innovations in instruction and learning drive how they provide, design, and use school buildings. With this goal in mind, the paper looks at five trends in education and what they imply about the kinds of buildings and spaces districts will need for tomorrow's schools. The five trends are: (1) pressure on schools to perform for all students, not just those who learn best in traditional settings; (2) demands for the personalization of learning, so that every child has a chance to learn and families have choices; (3) new technologies that will change how teachers teach and students learn; (4) periodic shortages of teachers (and school leaders) linked to swings in the economy; and (5) shifts in student population and residency patterns that will affect not only the demand for schools, but also the demands on schools. This paper has three parts. Part I outlines the five trends and what they might mean for schools; Part II offers six criteria, based on the trends, that can be used to guide district decisions about facilities; Part III, in an effort to further clarify these points, describes two districts that are using innovative approaches to get ahead of the curve when it comes to school facilities. The paper ends with a brief conclusion. (Contains 27 references.) (EV)

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The Future of School Facilities

Getting Ahead of the Curve

Michael DeArmond,
Sara Taggart, and Paul Hill

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INTRODUCTION

Forward-thinking educators usually accept the idea that tomorrow's classrooms will look different than today's. Instead of large schools, 52-minute class periods, and rambling curricula, they foresee classrooms and schools that are personalized and focused; they look for teachers that will emphasize mastery over breadth. Whether these aspirations are realized now or years down the road, they are unconstrained by the current routines found in America's schools. Innovative educators realize that industrial-age assumptions about learning – that everyone learns the same way; that there are "smart" kids and "dumb" kids – are obsolete. Tomorrow's classrooms will be based on something different.

But all too often, these same people see school facilities as a fixed frame of reference. "We'll transform teaching and learning," they might say. "But it'll happen here, in this building." The reasons for this limitation are complex. Some people take the word "school" to mean "building." They fear that changes in buildings will mean that their neighborhood will lose its school. Others simply assume that it would take too much money and political effort to change existing buildings. As understandable as these attitudes are, they in effect allow a given stock of buildings to limit how we think about teaching and learning.

This does not have to be the case. Instead of assuming that the future of learning has to take place in buildings we happen to have now, districts can let innovations in instruction and learning drive how they provide, design, and use school buildings. With this goal in mind, this paper looks at five trends in education and what they imply about the kinds of buildings and spaces districts will need for tomorrow's schools.

These five trends go beyond isolated changes in pedagogy or assessment (e.g. project-based learning, or exhibitions). They take a step back and point to broad forces that will affect how schools are organized. As such, they are perhaps a little harder to grasp than any single approach to teaching; and yet, in the long run, they are also more likely to affect every school in a given district.

The five trends are:

ONE Pressure on schools to perform for all students, not just those who learn best in traditional settings

TWO Demands for the personalization of learning, so that every child has a chance to learn and families have choices

THREE New technologies that will change how teachers teach and students learn

FOUR Periodic shortages of teachers (and school leaders) linked to swings in the economy

FIVE Shifts in student population and residency patterns that will affect not only the demand for schools, but also the demands on schools.

Each of these, if taken to its fullest, promises interesting new realities for public schools. They suggest that the "schools" of the future may encompass the local library, a science lab shared between local high schools and a community college, a classroom located on site at a software developer's corporate headquarters, or a new elementary school built with movable walls and computer wiring – and these are only a few of the possibilities.

Regardless of how these trends express themselves, however, school districts will have to respond to them in some way or another in the years to come. If they are constrained by a set of buildings whose location and structure were designed long ago, their response will be less than effective. If they think broadly about the future of learning and what it implies for facilities, they can instead anticipate and plan for school spaces that expand, rather than restrict, the educational opportunities they offer their children.

This paper has three parts. Part I outlines the five trends and what they might mean for schools; Part II offers six criteria, based on the trends, that can be used to guide district decisions about facilities; Part III, in an effort to further clarify these points, describes two districts that are using innovative approaches to get ahead of the curve when it comes to school facilities. The paper ends with a brief conclusion.

PART ONE

FIVE NATIONAL TRENDS AND THE FUTURE OF LEARNING

This section outlines five national trends in education that will affect the kinds of buildings and spaces districts will need for tomorrow's schools. As mentioned before, these are broad developments that go beyond changes in individual teaching practice. For each trend, we begin by describing the driving forces behind it; we then consider what it implies for schools.

Trend ONE:
Performance Pressure on Schools

There is no doubt that schools across the country are under increasing pressure to do better. As a 4th grade New York City teacher says about the pressure to raise test scores, "It's all around you, it is constant, it never lets up" (Goodnough, 2001). This trend is so important and pervasive that it is worth looking closely at the forces behind it. Of these, three stand out[1]:

- The standards-based reform movement
- Renewed unrest over the achievement gap
- Increased competition from new school choices

Standards-based reform. The logic behind standards-based reform is simple: society should make its expectations (i.e. standards) for student learning known; administrators and policymakers should evaluate schools based on these standards; and schools should be held accountable for student achievement.

A recent state-by-state review of standards-based reform by Education Week suggests that policymakers find this logic attractive:

> *Forty-nine states have academic standards in at least some subjects; 50 test how well their students are learning; and 27 hold schools accountable for results, either by rating the performance of all schools or identifying low-performing ones (Education Week, January 2001, Executive Summary).*

Some states like Texas track student achievement data closely, offering rewards and imposing sanctions for changes in performance over time. Other states like New York, Georgia, and Alabama require high school students to pass statewide tests in order to graduate (Education Week, January 2001).

It is self-evident that such systems create pressure for performance. The recently enacted federal elementary and secondary education package, which calls for even more tests and accountability, makes it clear that standards-based reforms are fast becoming "a fundamental part" of education policy and governance in America (Elmore, 2000, p. 4).

Unrest over the Achievement Gap. While attention to disparities in educational access peaked during the civil rights movement, school systems around the country are showing a renewed focus on the gap in achievement between poor and minority students and their middle-class white counterparts.

In some cities, parents and community activists have organized marches and rallies pressing school leaders to improve schools that serve poor and minority students. Districts and states around the country are beginning to respond by giving failing schools, sometimes called 'focus schools' or 'target schools,' extra support and/or some other intervention.

1. Beyond these three, the drive toward performance pressure is generally a part of the "reinventing government" movement which aims to improve government performance and efficiency by shrinking the bureaucracy, using the logic of the market model, and promoting "best practices."

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Add to this the roll back of affirmative action in college admissions, the general focus on test scores, and the increasing ethnic and linguistic diversity in the nation's classrooms, and it is clear why pressure for increased minority achievement is at the forefront of discussions about the future of learning in America.[2]

Competition from New School Choices. For many years, a family's choices about where to send their children to school were relatively simple: attend a neighborhood public school, or (if you could afford it) pay tuition at a local private or religious school.

By contrast, today's choices are complicated. For starters, "choice" can mean many different things: it can mean parents are able to choose where their child goes to school within a school district (through an open enrollment plan like Portland, Oregon's); or, it can mean choice between districts (through a regional or state open enrollment plan, like Minnesota's); it can mean the presence of charter schools; or, it can mean giving parents vouchers to attend privately run schools. School choice can even mean allowing home schooling parents to enroll their children part-time in district-run classes, sports, and art programs.

All of these "choices" are evident nationwide, though some are more widely available than others (charter schools, in particular, are growing rapidly). Though the evidence varies, it is clear that, in some districts, competitive choice has an effect on traditional public schools, leading them to try new ways to attract students and to boost achievement (Finn, Manno, Vanourek, 2000). To the degree that choice in any of these forms forces schools to compete for students, it may add to the pressure on all schools to perform.

Given all of this, forward-thinking districts should ask themselves, "What will increasing performance pressure mean for schools?" For starters, it may lead to the following:

- ***More Small Schools***. Research shows that the achievement gap grows more slowly in small schools and that small schools generally boost minority achievement (Wasley et al, 2000). As such, performance pressure, especially performance pressure associated with the achievement gap, may lead to smaller schools or other new classroom configurations (e.g. one-on-one remedial tutoring).
- ***Greater School Autonomy***. When schools are held accountable for performance, principals may demand more control over school resources. A bottom-up organization would allow principals to make program and resource decisions that fit their school's unique needs.
- ***Changes in the Supply of Schools***. Ultimately, if performance pressure is coupled with sanctions and rewards, the logic of standards-based reform raises the possibility that the supply of schools will change. Successful schools will prosper; struggling schools will ultimately change or close.
- ***New Grade Spans***. In response to standards-based reform and new graduation requirements (e.g. a certificate of mastery), parents with choices - or districts under accountability pressure - may demand new grade spans in schools. For example, some schools might focus on the transition years between junior high and high school only; others might focus on the final years of high school.[3]

None of these changes is certain to occur. But they represent likely responses to pressures that are certain to come.[4]

2. Professors Christopher Jencks and Meredith Phillips argue that narrowing the gap "would do more to move America toward racial equality than any politically plausible alternative" (Jencks & Phillips, 1998, p. 43). "To do otherwise," says Raul Yzaguirre, the president of the National Council of La Raza "is to admit to failure, tolerate racial differences, and give up on the very fundamental ideals of America." (Johnston & Viadero, 2000).
3. Plano Independent School District in Texas is currently doing just that at its senior high schools serving students in 11th and 12th grade. Students in each school are divided into several "sub-schools" as they focus on developing the knowledge and skills needed to graduate and enter college or the workforce.
4. Of course, it is useful to keep in mind that these, like all of the scenarios in Part I, are illustrative and theoretical, not definitive.

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Trend TWO: Personalization

As mentioned above, recent research on small high schools has highlighted the fact that some students are more successful in schools that, thanks to their size, can pay close attention to their students' individual needs. In particular, it appears that some students from minority backgrounds can do better in small schools (Wasley et al., 2000).[5]

These findings about small schools are not lost on philanthropists, the federal government, or parents. To one degree or another, all three groups are pushing for more personalized education. The Bill and Melinda Gates Foundation, for example, has invested $277 million to help convert large comprehensive high schools into small ones. The Clinton Administration's Small Learning Communities Program and the Bush Administration's new State Choice and Innovation Grants provide money with small schools in mind (Department of Education, 2001). And as parents become more aware of state and school-level expectations for students - and as they have more and more choices about where to send their children - it follows that they may demand schools that are personalized and that "fit" their needs.

Again, this raises the question, What will demands for the personalization of learning mean for schools? For starters, it may lead to:

- ***Schools sharing space.*** One way to answer the demand for small, personalized schools is to put several schools in one building – a multiplex. New York City used this "schools-within-a-school" approach for its well-known Julia Richmond Complex that includes six small schools of choice (the complex also houses a professional development institute, a teen parent resource center, and a health center) (Cook, 2000). Under similar kinds of arrangements schools may end up sharing gym, lab, and auditorium space while retaining distinct programs.
- ***Students learning off campus.*** The demand for personalized programs may lead to more off-campus activity for older students. Schools that offer quality school-to-work programs, for example, might provide a "work-based education coordinated with school-based instruction" (Donahoe, D. & Tienda, M. 2000, pp. 250-251). Through ties with employers, organized labor, public agencies and community groups, students - especially high school students - may spend part of their time on campus and part of their time in the community pursuing tailored courses of study.
- ***Ties to community colleges.*** As high schools try to meet their students' needs, they may make greater use of off campus resources at community colleges. Students may attend advanced placement and other courses at a community college, gaining access to more choices and benefiting from a seamless continuum of education from high school to college. The middle college high school model (wherein students attend school on a community college campus, taking both high school and college courses) provides another example of possible links between high school and college (Gehring, J., 2001).

Trend THREE: New Technology

Technology's importance in the future of education is a given. After all, 9 in 10 school age children have access to computers and the Internet is now "pervasive" (Newburger, 2001). But technology's importance in education is not only due to its

5. Because of this connection to student achievement and school performance, Personalization (Trend 2) is closely related to Performance Pressure (Trend 1).

sheer presence. It is also driven by:

- The demand for technology savvy graduates
- The demand for technology-based solutions to teacher/skill shortages

Demand for technology savvy graduates. Rapid technological change is the seminal force in our economy (Judy, R. & D'Amico, C., 1997). Looking ahead 20 years, forecasters predict that new technologies will continue to increase the demand for tech savvy workers, creating "new jobs [that] pay better and require higher skills" than jobs lost in the process (Ibid., p. 21). Public schools will be under increasing pressure to ensure that their graduates are prepared for these jobs.

Demand for technology-based solutions to teacher/skill shortages. As the nascent online education industry develops, schools that face skill or teacher shortages will be able to access relevant instructional programs through the Internet or other interactive media. Examples of such supplemental resources already exist: Florida Virtual School offers online courses to public and private school students in the state at www.flvs.net; former Secretary of Education William Bennett's company K-12 Inc. offers "classical" education in the early grades at www.k12.com; Paul Allen's Apex Learning offers Advanced Placement courses on-line at www.apexlearning.com. As these and other online educational services become increasingly relevant and high quality, they may offer schools new tools for reaching students, especially those who may not be learning well through more traditional approaches.

And so, What will the demand for and availability of new technology mean for schools? For starters, it may lead to:

- ***New mixes of teachers and computers***. Apex Learning, K-12 Inc., CyberSchool, and other online education providers allow schools to use an array of teacher-computer combinations. Accordingly, schools may need spaces that serve a variety of class sizes depending on whether instruction is computer-based or teacher-based.
- ***Students learning off campus***. Just as school-to-work connections will move students out of the classroom and into the community, computer coursework and distance learning create an opportunity for students to learn at home or at their local library as well as at school.
- ***Movable walls and wiring flexibility***. As technologies change, schools will need to be able to adapt their spaces to take full advantage of technological innovations.

Trend FOUR: Changes in Supply of Teachers

Today, teacher shortages are concentrated in urban districts and in certain subject areas, namely math, science, and special education (Recruiting New Teachers, 2000). But districts everywhere – urban, suburban, and rural – fear a potential shortage of teachers (and principals) that will bring significant challenges in the coming decades. The reasons behind teacher shortages are complex, and they may vary from region to region. But on a very basic level, there is a microeconomic story behind the shortages that can be summed up by two factors:

- Increases in the demand for teachers
- Stagnation in the supply of teachers

Increases in demand. The demand for teachers has been growing over time, in part because of expanding enrollments and class size reduction

policies. According to current projections, these patterns show no sign of changing in the coming decade (Hussar, 1999). In addition, the need for new teachers is caused in part by teacher departures. Some leave out of frustration with their work environment, others leave to pursue different professional opportunities, still others leave for personal reasons (e.g. the birth of children or a spouse re-location.). Of course, for many districts, the largest group of potential departing teachers is retirees. Indeed, almost half of current K-12 teachers will be eligible for retirement in the next ten years (American Council on Education, 1999).

Stagnation in supply. As the demand for teachers grows, the supply of people willing and able to teach is not expected to keep pace. Though traditional college education programs continue to turn out newly minted, credentialed teachers each year, many of these graduates never enter the classroom (Feistritzer, January 28, 1998), or are reluctant to teach in hard-to-staff urban schools, especially if the economy offers more lucrative job opportunities elsewhere.

What will the changing supply of teachers mean for schools? For starters, it may lead to:

- ***Technology-labor tradeoffs.*** Thanks to technology, schools (especially high schools) may be able to manage periods of limited teacher supply by using high quality Internet-based learning programs as described above.
- ***Changing definitions of adult roles in schools.*** As the supply and skill-set of teachers change, schools may want to alter traditional roles and responsibilities. Some school may seek new configurations with regards to administration, counseling/mentoring, and classroom teaching. Leadership and management functions may become more diffuse and entrepreneurial as principals do things like mixing full-time teachers with part-timers or Internet coursework as they look for new learning opportunities for students.
- ***Ties to community colleges and other schools.*** As a particular school site faces human resource constraints, it may draw on other schools or nearby community colleges and other organizations to supplement its program and teaching force.

Trend FIVE: Changes in student characteristics and numbers

Because fluctuations in numbers of students, their location, and their socio-economic status impact demands on schools, districts pay close attention to demographic forecasts and trends. On a national level, K-12 enrollment is slated to continue to expand to a record 53.4 million by 2005 and then to decline to 53 million by 2011. Most of this growth will be in the western states (Hussar, W. J., & Gerald, D. E., 2001).

While enrollment drops and rises will inevitably continue, demographic shifts will take on new importance as students enrolled in the nation's schools becomes increasingly diverse. Since the Civil Rights era, for example, the number of Black and Hispanic students in the country has grown by 5.8 million while the number of white students has shrunk by 5.6 million (Orfield, 2001). Today the United States has the most diverse student population in its history, and in the coming decades this trend will only increase (Ibid.).

What will these fluctuations and shifts in demographics mean for schools? For starters, it may lead to:

- ***An over or undersupply of school buildings.*** Within a relatively short period of time a district may face an overall influx of students (e.g.

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Orlando, Florida) or it may face a long drain of school-aged children (e.g. Portland, Oregon). Even within a district some parts of town may have overflowing enrollment while others may be under enrolled.

- ***Trade-offs between transportation and facilities.*** As districts face an imbalance of facilities and enrollment, they will want to make strategic decisions about whether or not to invest in transportation (moving students to where the buildings are) or in facilities (creating more options where the students are).
- ***Demand for new approaches to teaching students from diverse backgrounds.*** Schools with large populations of students learning English as a second language, for example, may want to develop the most effective approaches to meeting the needs of those children.

Of course, these five trends could have a profound or limited impact on a school district. Exactly what any city's schools like in 10, 20, or 25 years will depend on a complicated interplay between national trends and state, district, and neighborhood factors. And so, in addition to the five general trends discussed above, districts should consider local conditions that will shape their schools. These include state policies (e.g. standards and accountability; certificates of mastery, school space regulations), state and local finances (e.g. debt burden, levy passages), and local strategic plans and goals for education.

PART TWO

SIX CRITERIA FOR MAKING DECISIONS ABOUT SCHOOL BUILDINGS

Taken together, the five national trends - performance pressure, demands for personalization, new technologies, and changes in teacher and student populations - have serious implications for the future of school facilities.

Above all, they imply a host of new classroom and school configurations. These trends may drive large schools, particularly high schools, to break themselves into several smaller independent units, while sharing one large existing building. They may drive other schools to be built with moveable walls and wiring to accommodate changing school needs and technological innovations (much like current commercial space in urban areas). At the farthest extreme, other schools may be "virtual schools," engaging students in on-line learning accessed at home, in local libraries, or in special labs designed and built for these purposes. Indeed, some students in the future may spend only two or three days a week at a dedicated school building. The rest of the week they may be engaged in off-campus internships, service learning projects, or field research. As more and more off-campus learning opportunities are demanded and developed, one can imagine some high schools that look less like a comprehensive center for all student learning and activity, and more like a home base from which students launch their individually tailored learning plans. Given all of this, tomorrow's school districts will require a host of new space arrangements – the table below shows just some of the possibilities.

These are complex relationships. Some school districts, overwhelmed by this complexity, may be tempted to disregard all but the most traditional and readily achievable space arrangements. But in doing so they may limit the educational options available to students in their charge. In the end, traditional (and often formulaic) plans for school facilities will not do.

To make sense of these changes, districts will need a strategic approach to facilities provision. This means that in addition to outlining steps to accomplish over a specific time period (i.e. build school A by 2005; renovate school B by 2006), they will need to develop criteria or principles that guide their decisions about school space. The following six criteria, based on the five trends and their implications for school spaces, offer an example:

1. Facilities should focus on student learning and achievement
2. Facilities should be flexible
3. Facilities should be responsive
4. Facilities trade-offs and choices should be transparent
5. Facilities provision should be driven by data
6. Facilities should be economically efficient

Table 1. Educational trends will result in complex demands for new school spaces

Trends	Consequences for Facilities				
	Smaller schools	Buildings used by multiple schools	Buildings co-located with existing agencies, businesses	Buildings adaptable between school and commercial uses	Buildings with moveable walls and wiring
Performance pressures	X	X			X
Personalization	X	X	X	X	X
Technology		X	X	X	X
Teacher/Leader supply	X	X			X
Demographic shifts	X	X		X	X

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Focused on Student Learning and Achievement. Ideas about student learning and achievement should drive decisions about school space, rather than the other way around. School leaders, parents and students who have promising ideas for increasing student learning should be encouraged to dream about the ideal school space they need to achieve their goals. Of course, practical considerations and trade-offs have to be considered, but the district need not allow those issues to become excuses for not finding or creating school spaces that will enhance teaching and learning.

Flexible. Above all, the future requires flexible facilities – flexible in design, usage, and financing. Performance pressures, personalization, technology, changes in teacher supply, and demographic shifts all have the potential to drive new methods of instruction and assessment. Many of these same factors will push for new school and classroom configurations. Accordingly, a school facilities plan for the future must be agile enough to find and provide schools with a variety of spaces. It must also be able to reclaim space and redistribute it when needed.

Responsive. This criterion is closely related to the last. If performance pressure drives schools to demand more autonomy, administrators and teachers must be involved in discussions and decisions about their buildings and space. In short, in the future, facilities supply needs to be more than just flexible; it also needs to be responsive to principals and teachers' needs and suggestions about the spaces in which they work. It must be both "bottom up" and "top down."

Transparent. This criterion follows from the last two. If facilities supply is to be flexible and responsive, it is vital that it is credible too – principals and teachers have to have the sense that the process for making facilities decisions is fair. If costs and the rationale behind decisions are unclear, end users may see space administration and facilities decisions as capricious and inevitably come away disappointed or angry. The only way to assure confidence in the process is to conduct it in an open and public manner.

Driven by Data. In order to be flexible, responsive, and open, a facilities plan for the future needs good information. Districts need information about the spaces they own (or those they have access to), including data about their location, what condition they are in, and who is using them and for how long. Accordingly, a school district or other agency responsible for matching schools with facilities should conduct yearly audits of all available space.[6] In addition to some computerized inventory, a facilities plan for the future needs accurate demographic information about enrollment trends as well as information from policymakers about program and policy decisions that are on the horizon. System administrators must use this information to plan comprehensively and proactively, not incrementally and reactively. In the end, all facility projects need to be justified by data that is consistently gathered about structures, people, and programs.

Efficient. Despite its somewhat distasteful connotation among educators, efficiency is an important criterion for school facilities. In education, efficiency means focusing spending on productive activity, i.e. instruction. Through innovative partnerships or other arrangements, districts may be able to redirect resources away from inefficient facilities and toward instruction. Districts should also ask themselves if the potential exists for improving the quality of facilities without increasing public spending, or if it is possible to provide the same quality of facilities at a lesser cost to taxpayers.

Today is an especially ripe time for districts to consider rethinking their school buildings along these lines. This is because, in addition to the five national trends already outlined, districts across the country face a pressing need to add, renovate or replace aging educational facilities (U.S. Department of Education, National Center for Education Statistics 2000). By thinking strategically, dis-

6. This would ideally be done through something akin to the Massachusetts Institute of Technology's computerized inventory (INSITETM). At MIT, INSITETM keeps track of every building and space available on campus (It provides textual information as well as CAD drawings).

tricts have an opportunity for having their goals, priorities and strategies for raising student achievement drive their facilities decisions. Rather than allowing practical constraints and a desire to satisfy all constituents determine their choices, school districts can think about trends in education – both national and local – as they plan for the future.

To further clarify what these ideas might mean in practice, the next section describes two districts that are getting ahead of the curve when it comes to managing their school facilities.

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PART THREE
AHEAD OF THE CURVE

In the Portland Public Schools and the Niagara Falls City School District, ideas about instruction and learning are driving the provision, design, and use of school buildings. Portland and Niagara Falls each offer a unique perspective on innovative practice: Portland's Long-Range Facilities Plan, published in February 2002, is an example of how a district can think strategically about managing all of its school buildings. By contrast, Niagara Falls' new high school, opened in September 2000, is an example of how a district can think creatively about managing a discrete project involving only one of its schools. Despite this difference in focus and scope, both districts show how it is possible to go beyond the status quo when it comes to thinking about the future of school facilities.

Portland Public Schools

Portland's facilities strategy was built on several years' worth of work already underway in the district. Between 1999 and 2002, the district held dozens of public meetings and commissioned technical reviews about its school facilities. This work resulted in a Best Use of Facilities report, released in 2001, this served as a precursor to the district's 2002 Long-Range Plan. The Best Use report was a first effort to address the many complicated issues surrounding Portland's buildings and properties (Among other things, it revealed that Portland's education dollars were, in effect, subsidizing its inefficient school facilities).

In an inventive move, the district handed the task of translating the Best Use of Facilities report into a full-fledged Long-Range Plan to a local non-profit, called Innovation Partnership.[7] Working with the district and other consultants, Innovation Partnership developed the Plan between 2001 and 2002. The following description focuses on four elements of the Plan: the trends it identifies as important for Portland's future; the objectives it sets forth for Portland's facilities provision; the steps it outlines for categorizing and managing Portland's properties, and a new institution, called the Portland Schools Real Estate Trust, that it creates to help Portland get the most out of its facilities.

Future Trends

Portland identified two major trends that it believes will shape the future of its public schools. First, the district realizes that it has and will continue to have a decreasing school-age population. According to the projections of the Population Center at Portland State University, in ten years the city will serve 4,500 fewer students than it does now. Second, the district anticipates that changing practices in teaching and learning will require new kinds of school buildings (The changes highlighted by the Plan basically parallel the five trends mentioned in Part I of this paper, with a particular emphasis on the need to deliver personalized learning for all students). In addition, Portland decided that environmentally sound facilities management was important for the future health of the city.

Facilities Objectives

Given all of this, the district arrived at four guiding "objectives" for facilities management in the years to come.[8] Portland's four objectives are:

1. Learning comes first
2. Flexibility for the future
3. Annuity (annual resources for education), and
4. Quality in all investments

Learning comes first. As the report states, "The mission of the Portland Public Schools is to support all students in achieving their very highest educational and personal potential, to inspire in them an enduring love for learning, and prepare them to contribute as citizens of a diverse and international community" (Innovation Partnership, 2002, p.6). The Facilities plan places this mission at the center of all of its decisions about school facilities.

Flexibility. With decreasing enrollments and innovations in teaching and learning on the horizon, Portland anticipates that the future will demand new

7. According to Innovation Partnership's website, the group "bring[s] innovative solutions to persistent community problems. [through a] thorough investigation of related thinking from a local and national perspective." It initiates projects with a "take nothing for granted" approach.
8. For our purposes, these can be taken as analogous to the criteria mentioned in Part II of this paper.

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kinds of spaces for learning and teaching. It accordingly wants to avoid being "stuck with a set supply of fixed assets" (Ibid., p. 6). Instead of thinking about always occupying its current buildings, the district wants to manage its property as a set of "investments."

Annuity. In response to the Best Use report's finding that education dollars in Portland were subsidizing facilities, the Long-range Plan calls for the district's facilities to produce annual net revenue for education. That is, the district wants to maximize the amount of money it puts into instruction. To do this, the Long-Range Plan calls on the district to reduce its inventory of buildings through sales and/or leasing, reduce its operating costs, increase its cost recovery when opening facilities for community use, and to reserve any capital it gains from disposing of properties for future use (More on these and other such actions in a moment).

Quality. Finally, the district makes the point that it wants its investments in facilities to support the welfare of future generations. That is, it wants to avoid any short-term investments that would jeopardize the district's ability to serve students in the future.

And so, Portland is looking ahead strategically. It has considered what trends will shape the future of its schools, and it has laid out four pertinent objectives for managing its buildings. In addition, Portland has outlined a series of actions that will bring this framework to life.

The Plan in Action: Five Steps

After analyzing all 112 of its properties - looking at enrollment trends, facility condition, environmental ratings, etc. - the district has targeted each property for one of five possible steps. These steps are designed to improve "the flexibility, annuity, and quality of [the district's] facilities in order to better serve the needs of today's students without compromising the ability of future generations to serve the students of their time" (Ibid., p. 8). The five steps are:

1. To reduce inventory
2. To reuse space creatively
3. To retain space for future needs
4. To recycle property into new uses
5. To reinvest in properties for the future

Reduce inventory. The properties placed in this group represent "near-to-mid term opportunities for the district to gain revenue through sale or a long-term lease" (Ibid., p. 9). Most of the properties in this category do not currently house instructional activities. Pending a sale or lease agreement, the programs these properties currently house would be moved into other facilities. The rationale behind reducing current inventory is to save operating expenses and produce future net revenue. This move is directly related to the district's on-going decline in enrollment.

Reuse space creatively. Properties in this group "have room to accommodate users dislocated during inventory reduction," or they might be able to earn rent from outside tenants (Ibid.). This group also includes a few overcrowded facilities that need some kind of relief. The district describes "creative reuse" as including things like having multiple uses within single buildings, using buildings more efficiently, leasing space when appropriate, and adjusting school boundaries to balance demographics and relive crowding as necessary.

Retain space for future needs. Properties currently in this group are not "traditional" schools. Instead, these are district owned properties that either are leased to third parties or that are efficiently housing district functions other than neighborhood schools. The district will keep these properties "in reserve" to be used in case of some unforeseen crisis (e.g. a fire in another building that requires the district to relocate a program).

Recycle property into new uses. Properties in this group have what the district calls "disproportionately valuable" land in comparison to the buildings currently on site. Because the land is worth far more than the current buildings, these properties are slated for some kind of redevelopment – for example, the

district might construct a new school that allows for other additional uses through a joint occupancy agreement. The plan points out that none of the district's redevelopment ideas will require closing a school program.

Reinvest in properties for the future. This category includes the majority of Portland's schools. These are buildings that are fully enrolled and functioning well, as either a stand-alone neighborhood schools or as an array of programs. Some of them need major repair work now; others require only regular upkeep. Regardless, the district plans to reinvest in these facilities to ensure "an ongoing legacy of quality education in Portland" (Ibid., p.8).

With these steps, Portland has set a course for managing its facilities strategically. While setting the course was complicated, following it may be even more so. But following this course may be even more complicated. After all, each of the five steps outlined above raises an array of tricky financial, design, and usage issues that would tax any district's internal capacity. With this in mind Portland has taken a bold additional step in its facilities plan: it has drafted an outside organization to help manage it buildings for the future.

The Portland Schools Real Estate Trust

The Portland Schools Real Estate Trust is a new independent non-profit that will act as the district's professional "real estate assistant."[9] In the beginning, the district envisions the Trust helping it negotiate leases, sales, and purchases of property. In the longer run, the Trust might take on more responsibility for managing (and possibly owning) the district's real estate.

According to the plan, the Trust will work with three key purposes in mind: 1) to generate annual net revenue for the district 2) to help the district meet its goal of flexible property management and 3) to allow the district to focus its energies on its core mission, education, instead of "technical and community issues related to real estate" (Ibid., p. 21).

This is a bold move. Portland has realized that it cannot do everything it wants to do and hope to do it well. If it has too many competing purposes, some will inevitably get neglected. In addition, school officials, like other public officials facing elections, have an incentive to focus on the here and now – on operating expenses – and tend to neglect long-term capital investment needs. The Real Estate Trust tries to address both concerns.

Of course, the fruits of this partnership are not yet known – it is too new. But the idea clearly puts the district in a position to respond creatively to changes in teaching and learning, rather than assuming that it has to make do with the buildings and management structures it has had in the past.

Portland's plan provides an example of how a district might rethink the way it manages all of its properties. It takes a macro point of view. The next section on how Niagara Fall City School District built its new high school provides something else: it gives us the micro point of view, explaining how a district might rethink how it manages one of its properties. As such, the Niagara Falls examples provides more than a broad framework; it shows in detail how a district used innovative financing to get the school it needed. The paper then closes with a brief conclusion.

Niagara Falls City School District

In the late 1990s, the Niagara Falls City School District was struggling to provide quality buildings for its teachers and students, especially for its high schools. One building, Niagara Falls High School, was about to turn 100 years old. Renovations of Niagara High in 1920 and 1960 had left it a haphazard mix of additions: some walls were five feet thick; nine different elevations made handicap access a serious problem. By contrast, the district's other high school, LaSalle, seemed youthful – it was built in 1955. But LaSalle too was beginning to show its age, and both buildings were in need of serious renovation. Like so many districts across the country, Niagara Falls had little capacity to cope with what was becoming an impending crisis. With a declining tax base, high unemploy-

9. The idea of uncoupling real estate management from the district centraloffice originates with one of the authors. See Hill.

ment, a shrinking population, and voters wary of debt and taxes, the district lacked the resources it needed to fix its schools.

In 1996, Niagara Falls' Board of Education formed the Senior High Evaluation Committee (SHEC) to decide what to do about its aging high schools. Composed of various stakeholders, the committee's mission was to evaluate how bad things were at Niagara and LaSalle and to suggest a plan for setting things right. After studying the situation, the committee's members concluded that renovating the two schools would be more expensive than building a new one, and so they recommended that the district develop a new consolidated high school. They did not, however, provide advice on how to pay for it – that was left up to the Board.

Faced with severe needs and sparse resources – and the SHEC recommendation – the Board decided on an innovative plan for financing its new school: it formed a partnership with a private company (Honeywell Inc.) to build the new school and then lease it back to the district. Today Niagara Falls is enjoying the results of this plan. Its new $80 million Niagara Falls High School opened in the fall of 2000 – "a revolution in school financing, partnership, programming, leadership, and technology," according to Superintendent Carmen Granto (Thompson, 2000). Among the new school's features: ("Highlights of Niagara Falls High School," 2000).

- Four "theme" towers, each holding 600 students and their own principal. These schools-within-a-school each have their own focus: visual, performing and communication arts; business, finance, and entrepreneurship; math, science, and technical preparation; and health, sports, and recreation.
- The school doubles as a community center, with planned public use of its computerized library, Olympic-sized pool and gymnasium, performing arts center, and health clinic.
- It includes a "Technology Core" that houses computers, televisions, and video viewers for district and rental use.
- The school's "Art Core" contains a public art gallery, studio space, a photography studio, and two long-distance learning centers.
- Each of its 2,400 students gets a laptop computer with Internet access at both home and school (The laptop program was the result of a separate partnership with IBM).

Students and school officials were excited. As incoming freshman Stephanie Wruck said, "My [younger] brother says I'm so lucky.. He can't wait to go here" (Ibid.). During the opening ceremonies, then U.S. Undersecretary of Education Judith Winston called the new school, "a remarkable new beginning for education" (Cardinal, 2000).

This section gives a brief explanation of how Niagara Falls moved from two failing facilities and inadequate resources to its new beginning. Its approach was far from traditional.

Getting out of the bricks and mortar business

As part of the industrial rust belt, Niagara Falls was in danger of becoming an example of a place where both neighborhoods and schools are worn and faded. A shrinking tax base; high unemployment; voters wary of new taxes (they rejected the last school bond 16 to 1) – add aging buildings to the list, and the picture is pretty bleak. Again, it is not an unfamiliar story: increasing facilities needs and scarce resources. Given these challenges, Niagara Falls decided it could not go it alone when it came to building its new school. Instead, they took a novel step and formed a partnership with Honeywell Inc. in 1997 to construct what was to become the first privately financed public school building in New York State.

The Niagara Falls School District had a propitious history with Honeywell. In a previous $22 million deal, the district had hired the company

to upgrade boilers and other energy equipment. Honeywell's performance contract guaranteed that its new equipment would lower the district's energy bills (Over time, the district used these savings to pay for their new boilers). With this success in mind, district officials approached the company with the idea of building an entirely new school to replace Niagara Falls and LaSalle. Honeywell had never done anything like this before, but its local Niagara Falls sales representatives were intrigued.

Moving forward with the idea of a public–private partnership, the district issued a Request for Proposals (RFP) for its new school. The RFP covered the entire process: financing, designing, and constructing a new, state-of-the-art "turnkey" facility. Five companies responded to the RFP, and the district assembled several of them into a team with Honeywell as the project leader. Under the final plan, Honeywell would manage and direct the project, hire the construction and design companies, and arrange the financing. Because Honeywell did not want to own the building, the company and district decided to form a special entity called 4455 Porter Road Inc. to hold title to the building and eventually administer the lease (Honeywell was not interested in getting into the real estate business; rather, it collected a $5 million management fee for its work and had its hardware installed in the new school). In the final arrangement, 4455 Porter Road would lease the school to the district for 30 years for $4.8 million per year (about 83% of this would be reimbursed by the state) and at the end of 30 years, the district would own the building. Without this public-private partnership, the district could never have afforded its new school.

Following the Money

How the arrangement fit together is a little complicated. Figures 1 and 2 on the following page break down its basic structure. The figures show who is involved (the district, Honeywell, 4455 Porter Road, and the investors) and outline the flow of funds and agreements between them.

4455 Porter Road is a good point to start. As already mentioned, under the agreement Honeywell would assign control of the lease to 4455 Porter Road. 4455 Porter Road then owns title to the building and is responsible for administering the lease and the flow of payments, in effect acting as a trustee. The trustee (4455 Porter Road) then begins by raising money for the construction of the school by selling certificates of participation (COPs) to investors – these are tradable securities, like bonds. In this case, Honeywell and the district chose J.P Morgan to act as the project's underwriter. Figure 1 shows 4455 Porter Road selling the COPs and sending the proceeds to Honeywell, the project manager, who then uses them to pay the contractors, etc. The COPs acknowledge that investors are entitled to part of the lease payments made by the district. Accordingly, figure 2 shows 4455 Porter Road paying investors using funds it collects from the district once the school is built.

4455 Porter Road also sent some of the initial COP proceeds to the district so it could create a debt-service reserve fund (a kind of insurance policy for the deal).[10]

Is it debt or not?

In some ways, a lease-purchase agreement like this resembles traditional municipal debt financing;[11] in others ways, the two methods are quite different. Perhaps the most important difference is how districts pay back the borrowed money under the two arrangements. With typical municipal debt, the full faith and credit of the government/district guarantees repayment of the borrowed money. That is, the district agrees to levy and collect property taxes to repay the principal and interest on what it borrowed. By contrast, repayment of money borrowed in a lease-purchase agreement is based only on the district's pledge to make lease payments from its operating budget, subject to the annual approval or disapproval of the school board. As such, New York State does not legally consider these payments to be debt.

This debt distinction has important budgetary consequences for Niagara Falls and other struggling dis-

10. That line has been omitted from the figures for clarity.

11. Both bonds and COPs are generally issued in $5,000 denominations, both involve stated serial and term payment options, and both of them require underwriters, bond counsel, and a registrar.

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Figure 1

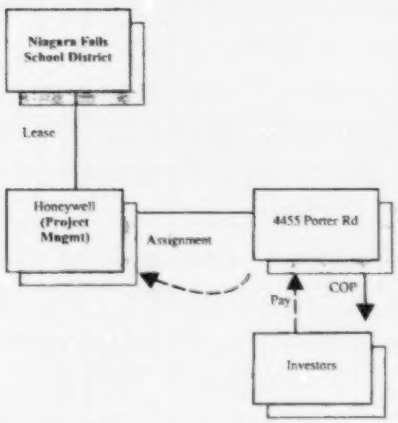
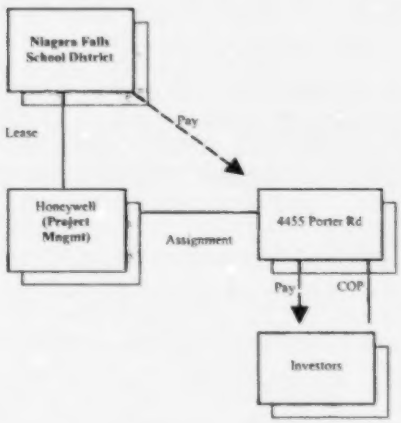


Figure 2



tricts. Most states, including New York, place limits on how much money a district can borrow (This is usually somewhere around 10 percent of the assessed evaluation of nonexempt property in the district). If a district is at its debt limit, it cannot borrow any more money. This seems to make sense – you do not want to take on more debt than you can handle. But in some cases district debt limits are bundled with the debt limit of the surrounding city government. So when a city borrows money to build roads and bridges, it counts against the school district's debt capacity (This is the case in nearby Buffalo, NY). Because lease payments are legally not considered debt – they are technically not a long-term obligation of the district – they allow districts nearing their debt capacity, for whatever reason, to access needed funds. Indeed, Buffalo is actively exploring a financing arrangement similar to the one in Niagara because of this very problem.[12]

No Taxes?

Of course, Niagara Falls still had to find a way to make its yearly lease-payments – the school was not free. Several complicated pieces had to come together for the district to uphold its end of the bargain. First, the district requested the maximum amount of state reimbursement it was entitled to; this state-level funding proved crucial to the district's ability to pay for its school. Second, the district sold off assets it no longer needed (one of its high schools sat on 50 acres next to an outlet mall – a valuable piece of real estate). Third, the district saved money as it consolidated the operations of the two high schools: it no longer had to maintain two buildings, two pools, two stadiums, etc. And fourth, the district was fortuitously on schedule to retire some debt service from previous municipal borrowing. In the end, Niagara was able to make its lease payments without raising property taxes.

What about the investors? This kind of financing is attractive to them because the Internal Revenue Service considers the interest portion of the lease payments to be tax-exempt. The owner of the building, in this case 4455 Porter Road, is not entitled to any tax benefits resulting from ownership (such as depreciation) which allows investors to collect the interest portion of the district's lease payments tax-free. According to Roy Rogers, Niagara Falls' district administrator for school business services, the district's certificates will pay investors about 5.5%; but because they are tax-free, their yield will be boosted to somewhere between 8 and 12%.

12. To ensure lease payments are not considered debt service by the state, lease-purchase agreements include a non-appropriation clause that allows the district to terminate the lease at anytime without penalty, except the loss of the property in question.

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Higher cost – and more flexibility

It sounds like a good deal for everyone – the district, investors, and Honeywell. But as any public finance textbook will tell you, one of the chief disadvantages of a COP-financed lease-purchase agreement has to do with cost. In general, COP financing costs between 1/4 and 1% more in interest than municipal debt financing. This is because, for investors, the COPs are less secure than bonds. As mentioned before, bonded debt is backed by the taxing power of the district. Investors can rest assured they will get paid because school districts generally do not go out of business. By contrast, because of the structure of the lease-purchase agreement, districts may terminate the arrangement at any time. The risk for investors is higher, and so is the interest rate. Lease-purchase agreements usually temper this risk by including non-substitution clauses where districts agree not to substitute "the same or similar property for the lease property for a specific period of time" if they withdraw from the lease (An Introduction to Municipal Lease Financing: Answers to Frequently Asked Questions, 2000, p.22). In the end, Niagara Falls paid about 1/2% more in interest through COP financing than it would have under municipal debt.[13]

For the district, the extra cost may have been worth it. It bought them something that municipal debt and asset ownership could not: flexibility. In a bond financed project, a district must worry about the lead-time necessary to hold a bond election; it must plan accordingly and wait for funds, even if its facilities are at the breaking point. At the same time, even if districts successfully plan for this lead-time, the end results of an election are uncertain: whether or not a bond passes is up to the voters. They may reject it and send the district back to the drawing board, waiting for another election.[14] All of this was avoided in Niagara Falls. The agreement with Honeywell allowed the district to move much quicker than it would have with traditional financing.

A final word on cost: the district was able to save money by having Honeywell manage the entire project and by hiring a single general contractor rather than separate contractors for each part of the construction (e.g. one for general construction, one for electrical work, one for plumbing, and one for heating). Because of the project's condensed organization, district officials believe they saved 10 to 15% on construction costs, possibly offsetting some of the increased finance charges.

13. Another factor that drives up the cost of COP financing is the need for debt-service reserve funds. These typically equal about 10% of the amount borrowed – again they serve to temper the risk of the agreement (state law generally does not required such funds for municipal debt). Niagara was able to establish its reserve fund from part of the proceeds (and the accompanying interest) that came from the COP sale.

14. To borrow money through municipal bonds, districts must generally obtain approval from the voters (often with a super-majority of 60 percent).

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Conclusion

Portland and Niagara Falls show that districts need not see their current buildings as a fixed frame of reference when it comes to the future of their schools. Instead, they can work to transform teaching and learning and the places where it takes place. Portland's Long-Range Facilities plan takes a strategic look at the future and lays out goals, a plan of action, and the new institutional capacity (The Real Estate Trust) needed to make it a reality. Niagara Falls' partnership with Honeywell opened up possibilities in financing and design that will serve the city for years to come. As we wrote in the introduction, and as these two cities show, school districts do not have to assume that the buildings they have now present the only choices they have about where to house their schools. Indeed, the future demands that they do not.

In tomorrow's schools, districts and teachers will not "do the same thing for everyone." Instead, they will aim to give parents and students choices among many distinct schools. Schools across the country are already searching for new ways to teach, new ways to organize, and new ways to focus their energy and resources to maximize the gains for students. The range of options for where learning takes place will grow broader and more complex, not narrower and simpler.

In tomorrow's cities, schools and communities will build exciting new partnerships to meet their mutual needs. Schools in Washington, D.C. are already blending learning space with housing or commercial space, challenging quite literally the traditional separation between home, school, and community.

In tomorrow's district's, school leaders will demand new levels of control over decisions that affect their ability to help students succeed. Districts like Chicago are already searching for a new balance between centralized and decentralized decision-making in an effort to give schools the flexibility they need to meet their new responsibilities.

Of course, it is possible that none of the trends and implications outlined in Part I of this paper will come to fruition on a grand scale. And yet all of them will probably exist on a small scale somewhere. In this environment of change and uncertainty, the opportunity exists for school districts to create approaches to school facilities that ensure that school space decisions bolster, rather than limit, the educational options of students. It is an opportunity they should take.

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